

consideration of the documents identified in that Information Disclosure Statement by initialing the PTO-1449 form and returning a copy of the initialed form to the undersigned.

35 U.S.C. § 102 & 103 Rejections

Claims 1-14 were rejected under 35 U.S.C. § 103 (a) as allegedly being unpatentable over Odaka et al. (U.S. Patent No. 5,317,397, hereinafter "Odaka") in view of Lee et al. (U.S. Patent No. 5,592,226, hereinafter "Lee"). Applicants respectfully traverse each of these rejections for at least the following reasons.

The Examiner has relied on the Lee reference to teach "a control scheme that takes the complexity found in the sequence of moving pictures, and adaptively allocates the proper amount of bits for encoding the sequence of moving pictures by changing to the proper quantization step size" (Office Action date January 15, 2002, page 4). From this assumption regarding the teachings of Lee, the Examiner alleges that it would have been obvious for one of ordinary skill in the art to combine these features with the Odaka invention to arrive at Applicants' claimed combinations. However, Applicants respectfully disagree with both the Examiner's characterization of Lee and the alleged combination of the Odaka and Lee references.

Referring to Figs. 4 and 10 of Lee, after a delay of one GOP during encoding the first detector 12 declares a scene change of Type 1 for the current frame when the distance or relative movement measurement between the current frame f_c and the immediate past frame f_{c-1} is above a threshold T1, as shown in step 103 of Fig. 4 and

10. This type of scene change corresponds to the actual scene content change wherein f_c is coded as an I2 frame (a very coarsely quantized intra frame) and the immediate past frame f_{c-1} is coded, in step 106, as a P2 frame (a very coarsely quantized predicted frame).

Alternatively, the second detector 14 declares the current frame f_c as a scheme change of Type 0, when the distance or relative movement measurement between the current frame and the last reference frame f_{ref} is above a threshold T0 as shown in step 104 of Fig. 4 and 10. However, this time the immediate past frame becomes a P1 frame that has the properties of a regular predicted frame (column 10, line 53 to column 11, line 11). Further, in the case where neither the condition of step 103 or step 104 is satisfied, the next frame is checked.

The above-described process performs a comparison between the coding target frame f_c and the immediate past frame f_{c-1} or between the current frame f_c and the last reference frame f_{ref} . However, the detection of the motion between the frames as a whole is not performed at all.

Still further, the Lee reference discloses that it relies on special frame types (a total of 6) and its special "TAMI" algorithm to accomplish the above-described processes, as noted in column 9, lines 44-45 quoted below.

In the present TAMI algorithm, six different frame Types, I1, I2, P1, P2, B1, and B2 are used. Frame Types I1, P1, and B1 are the same regular frame types as defined in the MPEG standard. Frame Types I2 and P2 have the same bit allocation as B1 frames; thus I2 and P2 are very

coarsely quantized intra and predicted frames, respectively. On the other hand B2 is an interpolation frame with more bits than a regular B1 frame, and generally fewer bits than a P1 frame. An I1 designated frame is a full frame, and is finely quantized.

Therefore, the combination alleged by the Examiner is not valid, even if the teachings of Lee were properly interpreted, which Applicants respectfully submit they are not. As stated in MPEP § 2143.01, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Further, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

As previously noted, the Odaka patent explicitly refers to three steps (col. 22, lines 51-57) that are performed for rate control as:

- (1) allocating an amount of bits (a bit rate) to N pictures from the I picture to the B3 picture immediately before the next I picture;
- (2) allocating and updating an amount of bits for each picture; and
- (3) controlling the quantization step size in each picture by using a virtual buffer.

Therefore, the Odaka patent achieves this by updating the allocation rate of the amount of codes in such a manner so as to set the relationship among the I,

P and B pictures to a predetermined constant relationship. The primary function of the encoding control processes of the Odaka system is to allocate the target amount of codes to each of the three picture types based on the global complexity measure that is a product of the number of generated bits and the respective quantizer step size.

In contrast to this "principle of operation" of the Odaka patent, the Lee reference relies on a custom set of frame definitions (i.e., six different frame Types, I1, I2, P1, P2, B1, and B2 are used). This in and of itself destroys the combinability of Odaka and Lee as alleged by the Examiner, because it would require that Odaka adopt the unconventional bit allocations of the additional frames which would destroy the predetermined constant relationship between the conventional I, P and B frames.

Still further, in direct opposition to the predetermined constant relationship taught by Odaka, Lee explicitly teaches to vary the bit relationships and even control the bit rate by controlling the type of frames used, such as describe in column 3 lines 1-13, as follows.

When the system is used with a transmission channel such as used in digital television, the bit rate may be controlled by loading the processed bits into a buffer and controlling the number of levels used in the quantizer so as to keep a given number of bits in the buffer. In the event that two or more successive frames have global motion in excess of T_0 so that the frames just prior to them are designated as good resolution P1 frames, it is possible that controlling the bit rate may cause a second P1 frame to be

processed with fewer bits than desired. In such a case, only the first P1 frame is processed, and the frames between it and the next reference frames are processed as B1 frames even though they may qualify as P1 frames, in another embodiment of the invention.

Clearly, this type of operation of Lee is in direct opposition to the principles of the Odaka patent. Therefore, the teachings of these references are not sufficient to render the claims prima facie obvious, even if the alleged combination did yield Applicants claimed combinations, which it does not. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

The remaining dependent claims are allowable at least by virtue of their dependency on the above-identified independent claims. See MPEP § 2143.01. Moreover, these claims recite additional subject matter which is not suggested by the documents taken either alone or in combination.

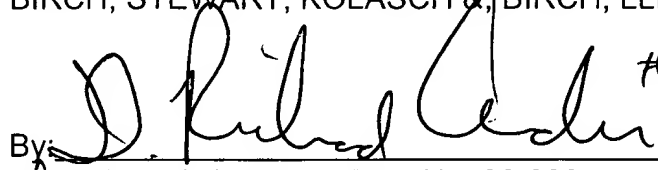
CONCLUSION

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and such allowance is respectfully solicited. Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Mark E. Olds, Reg. No. 46,570, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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